Chapter 3

3. Assess the degree to which plan policies and tasks have been implemented from 1992 to the present.

The *Long Range Plan for the Klamath River Basin Conservation Area Fishery Conservation Program* (Kier Associates, 1991) establishes objectives and makes recommendations for achieving those objectives. The recommendations are presented in a step-down structure, which the Task Force has found difficult to use. In order to facilitate analysis for this project and also to improve long-term utility to the Task Force, the original recommendations have been consolidated to eliminate redundancies. For example, policies relating to workshops or community forums now appear in the education section. Virtually every section of the Long Range Plan calls for improved communication between resource users, such as timberland managers and salmon and steelhead users. These were eliminated because they are accomplished more directly through educational objectives and with cooperative processes such as CRMPs. Monitoring needs, which are outlined in most of the sections of the step-down structure, have been combined into one section on monitoring. Outdated recommendations, which could be dropped, are marked with a double asterisk (**).

The discussion below is framed around the newly consolidated recommendations, which can be found in Appendix 3-1. Task 3 also required this contractor to recommend a means of maintaining an on-going assessment of Restoration Program activities in a database. The new consolidated recommendations provide a simple coding system that can be used to help track projects. Discussions on database management can be found at the end of this Chapter. A summary of over-all Program expenditures by categories follows the methods section.

METHODS

The USFWS database of restoration projects was reviewed to determine which objectives of the Long Range Plan were funded, and the level of funding that was provided. Task Force actions and other actions that helped meet recommendations were also considered. The findings of the previous USFWS (1993) evaluation (covering 1989 - 1992) were used as well.

Each section below reports findings on the level of support given to each of the recommendations in the Long Range Plan, and suggests future actions the Task Force should take. In some cases, recommendations were found to be unnecessary or impractical. The Task Force may want to eliminate these recommendations, which have been marked with double asterisks.

SUMMARY

The USFWS administrative database is a useful tool for evaluating how Program funds are allocated. The letter codes used for the various categories tie back to the Long Range Plan.

The categories are:

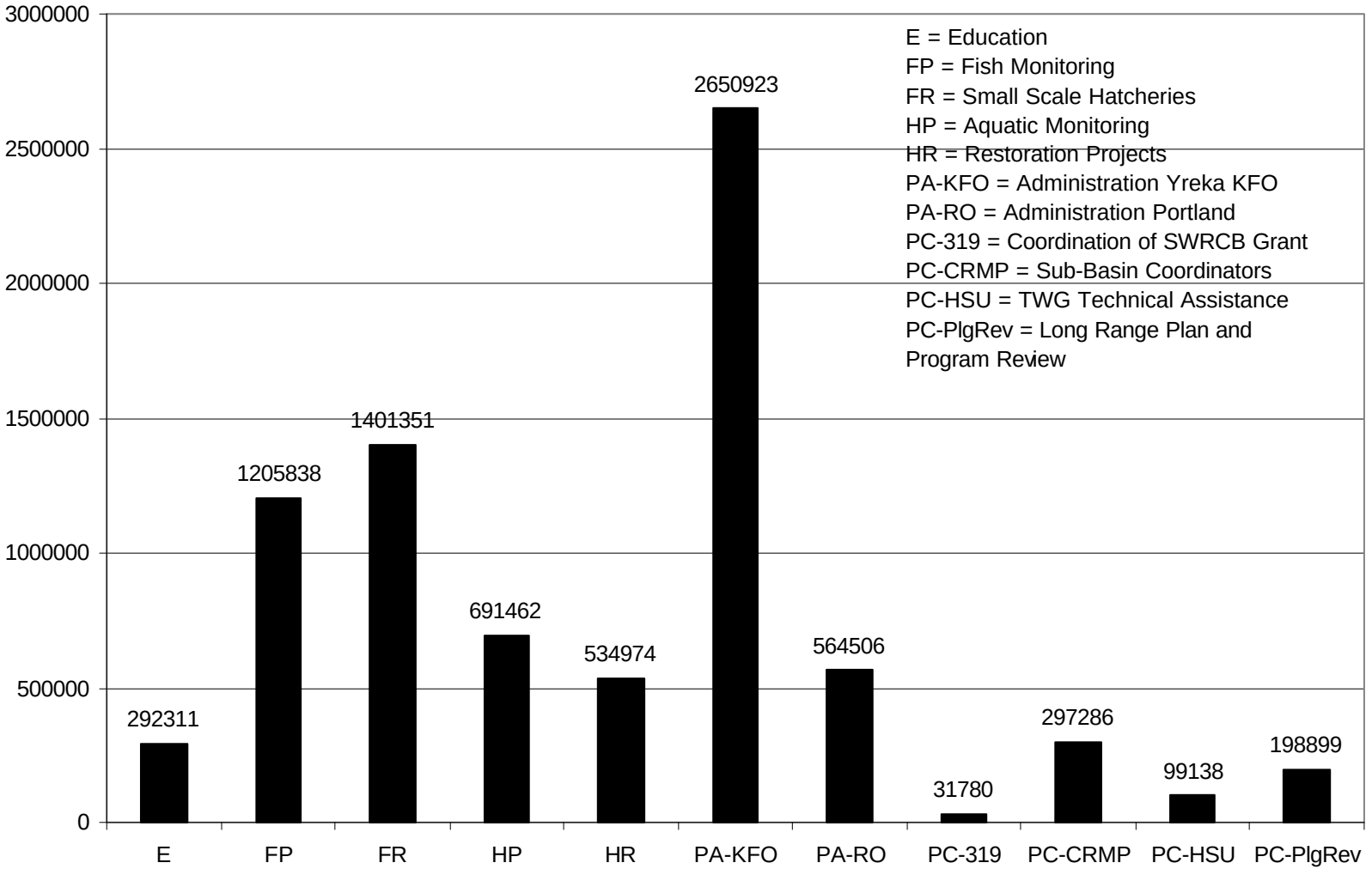
- PA = Program Administration which includes both the Yreka USFWS office (KFO) and the Regional Office (RO) in Portland,
- PC = Project Coordination which includes CRMP funding and planning activities and evaluation,
- E = Education, including both school curriculum and public education projects,
- FP = Fish Protection is mostly monitoring of fish populations and stock structure,
- FR = Fish Population Restoration or hatchery related projects,
- HP = Habitat Protection and represents habitat monitoring projects, including upslope sediment assessments, and
- HR = Habitat Restoration projects.

The largest Program expenditures have been for administration, including overhead for both the Yreka Klamath Field Office and the USFWS Regional Office in Portland. Operating expenses incurred by the Task Force and Klamath Council also fall under this category. Small scale hatchery operation was a significant part of Program expenditures until recently and ranks second in funding levels. The third largest category of funding is Fish Protection (FP), which indicates a strong level of support for fish population monitoring. Fourth is habitat protection which has been mainly stream and watershed monitoring. Program coordination includes funding coordinators for the CRMPs, which facilitate funding from many other sources. Habitat restoration projects received the next highest level of funding. Educational effort ranks last in funding. Figure 3-1 shows totals spent in each category. .Figure 6-1 compares the amount spent on projects and administration. See Appendix 6-2 for a complete list of projects funded each year.

HABITAT PROTECTION

Chapter 2 of the Long Range Plan focuses on habitat protection and is split into several sections: timber harvest, mining, agriculture, water and power projects and stream diversions. Discussions below are framed around these topics. The water and power section is now called "large dams" and stream diversions are called "small scale diversions".

Figure 3-1. Klamath Restoration Program Expenditures by Category 1989-1997



Timber Harvest

HP - Objective 1: Protect stream and riparian habitat from potential damages by timber harvesting and related activities.

Policies and recommendations from the timber harvest section of the Long Range Plan calling for educational forums and materials for foresters (2.A.1a and 2.A.1c) have been merged with those in the community education section. All of section 2.A.2 deals with monitoring and recommendations from that section have been merged with others regarding monitoring.

TH 1: Develop salmonid habitat protection standards for timber harvest (2.A.1b)

Neither the Task Force nor its Technical Work Group (TWG) have formulated habitat protection policies for timber harvest. However, the NWF Plan (FEMAT, 1993) and its Aquatic Conservation Strategy (ACS) provide guidance on needed protection for watersheds and streams as noted in the USFWS (1993) plan implementation review. Fish-bearing streams are to have a riparian buffer which extends two site-potential tree heights or to the top of the inner gorge. Under the ACS the most important fish bearing streams that provide refugia are protected in Key Watersheds. Before any timber harvest can take place in Key Watersheds, a watershed analysis must be conducted which provides further information of the risks of timber harvest and other land management activities.

Habitat protection from timber harvest on private lands remains problematic. Extensive logging in watersheds such as those in the Lower Klamath, including in unstable streamside locations, is confounding restoration in that sub-basin. See recommendation TH 4.

TH 2: Form CRMPs in important watersheds to deal with timber harvest issues. (2.A.1f)

The Task Force has served as a catalyst for the establishment of cooperative resource management planning (CRMP) groups and has funded a coordinator position for the Scott CRMP, which deals with erosion related to timber harvest. The French Creek Watershed Advisory Group was formed to deal with this particularly erodible watershed in the Scott Basin which has mixed ownership (USFWS, 1993). The group has worked together to develop plans for road management, fuels and fire and a habitat and fish monitoring plan. The effort in French Creek has helped win cooperation and erosion control projects have been carried out on both public and private land with a diverse source of funding, including the Klamath Restoration Program.

TH 3: Encourage the USFS to establish cooperative working relationships with private timber companies in watersheds over cumulative effects thresholds. (2.A.1g)

The Klamath National Forest worked actively with Fruit Growers Supply Company to control erosion in the Beaver Creek watershed. The USFS recognized that this watershed

had a high density of roads that caused it to be over cumulative effects thresholds. Klamath NF acquired funding for restoration from the Klamath Basin Ecosystem Restoration Office and the Fruit Growers supplied equipment and man power to decrease erosion risk related to roads. However, in 1999 the USFS is planning additional timber harvests in the Beaver Creek watershed and Fruitgrowers Supply Company has stepped up logging activity.

Recommendation: Continue to foster and encourage locally based efforts which take a watershed approach to erosion problems related to timber harvest and roads. Seek restrictions on private land timber harvest from the Board of Forestry Harvest plans continue to be filed in watersheds that are over cumulative effects thresholds.

TH 4: Seek improvement of stream protection on private lands through revision of the California Forest Practice Rules including: 1) decreased disturbance of erodible soils, 2) improved protection of riparian zones, and 3) allowing watershed rest in basins over CWE thresholds to promote aquatic habitat recovery. (2.A.3a, 2.A.4b)

The California Forest Practice Rules (FPR) have undergone many revisions since the Long Range Plan was finished (USFWS, 1993) but adequate protections for erodible soils, riparian zones and degraded watersheds have not been implemented. USFWS staff responded to a 1992 California Department of Forestry (CDF) survey by describing problems with timber harvest in the Klamath Basin. While timber companies in the eastern portion of the basin have been working cooperatively toward mitigating problems related to timber harvest, serious problems still exist with timber harvest in the Lower Klamath sub-basin. The California Board of Forestry (BOF) may be more open to input from the Restoration Program because of a shift in the make up of the Board.

Recommendation: Work cooperatively with the California Board of Forestry on protecting aquatic health.

TH 5: Work to improve timber harvest practices on USFS lands by 1) protecting to the least damaged salmonid habitats, 2) protecting riparian habitats, 3) decreasing activities on unstable soil types and 4) providing adequate time for recovery before new timber harvest in watersheds over cumulative effects thresholds. (2.A.3b, 2.A.4c)

Timber harvest and land management planning on National Forests has improved dramatically since the Long Range Plan was published (see TH 1). The Northwest Forest Plan (FEMAT, 1993) provides for protection of refugia by recognizing Key Watersheds and prescribing very wide riparian buffers in these watersheds. The Six Rivers and Klamath National Forest (KNF) Land Management Plan recognize "extremely erodible" soil types and call for stringent guidelines for timber harvest in watersheds with these soil

types. The KNF recognizes that some mixed ownership watersheds, such as Beaver and Horse Creeks, are over cumulative effects thresholds and has not allowed more timber harvest on Federal lands in these basins. However, Matrix designated watersheds that are slated for timber harvest, are showing indications of being over cumulative effects thresholds. Since some of these watersheds are important fish producers, the Task Force should continue to work with the USFS to make sure that fish habitat in these drainages is adequately protected.

Recommendation: The Task Force should support implementation of the Northwest Forest Plan and the TWG should continue to work with the USFS fisheries and watershed staff to improve understanding of cumulative watershed effects and prioritization of restoration.

Mining

HP - Objective 2: Ensure that mining activities do not cause damage to fish habitat.

The most widespread mining activity in the Klamath Basin is still suction dredge mining for gold Long Range Plan recommendations regarding mining of this type call for improving regulations, promoting further studies and pursuing educational programs to reduce damage to fish habitat. The latter two categories are now included in the monitoring and community education sections of this report, respectively. Other forms of mining such as pit mining and gravel mining are discussed after suction dredge mining.

Suction Dredge Mining

M 1**: Work with CDFG to maintain mining closures of important summer steelhead streams and to shorten the mining season in streams where late spawning winter steelhead may be effected. (2.B.1d, 2.B.1.e1)

As noted in the USFWS (1993) report, the California Department of Fish and Game altered suction dredge mining regulations in the Klamath Basin in 1994. The USFWS staff provided comments in this process and many of the recommendations from the Long Range Plan were included. Important summer steelhead streams such as Clear, Dillon and Wooley creeks remain closed to mining. A later season for suction dredging was implemented on some streams with late spawning winter steelhead, such as Elk Creek.

M 2**: Request that CDFG have all miners flag dredge holes to reduce problems for fishermen. (2.B.1.e2)

The Task Force has had no activity on this policy.

M 3**: Request that CDFG improve record keeping to keep track of the number, location and dredge size of various mining activities. (2.B.1.e3, 2.B.2c)

The Task Force has not pursued any action on this policy.

Recommendation: Eliminate this policy or define importance and use of this data and work with CDFG.

Other Mining Practices

M 4: Support a bonding requirement for large scale mines and ensure that mining sites have a proper reclamation plan. (2.B.2d, 2.B.2e)

The Task Force has not acted on this policy but few large scale mining operations have been advanced in the Klamath Basin in recent years.

Recommendation: The Task Force should request that the USFS and other permitting agencies notify the USFWS for comments if large scale mining activity is planned.

M 5**: Request lead Surface Mining and Reclamation Act (SMARA) agencies to assess fines for non-compliance with SMARA regulations. (2.B.2g)

The Task Force has taken no action on this policy.

Recommendation: The Task Force should consider taking this action or removing the policy.

M 6: Promote the abatement of any water quality and habitat problems associated with abandoned mining operations. (2.B.2f)

While the Task Force has taken no action on this policy, there are still some potential abandoned mine sites that could be contributing point sources of pollution to Klamath Basin streams. The Grey Eagle Mine is noted as the cause of discoloration of rocks in Indian Creek (see Appendix 5). The Siskon Mine in Dillon Creek also poses a threat to water quality. Monitoring should be carried out to discern whether problems exists with heavy metals or other toxins from old mine sites (see Monitoring section).

Recommendation: If abandoned mines such as Grey Eagle and Siskon are found to be effecting aquatic health, work cooperatively with the USFS, EPA and SWRCB to alleviate problems.

Agricultural Impacts

HP - Objective 3: Protect and improve water quality of stream habitat from adverse agricultural impacts.

As with previous sections, educational policies offered in the Long Range Plan have been moved to Community Education and those dealing with monitoring to the Monitoring section. Many of the policies in this section also cross over with restoration objectives and some have been moved to Habitat Restoration (Objective 3).

AG 1: Encourage "best management practices" to reduce the amounts of animal waste and fertilizers entering watercourses, focusing initially on demonstration projects. (2.C.1b)

No "best management practices" (BMPs) have been developed for agricultural non-point source pollution for the Klamath Basin except that the North Coast Regional Water Quality Control Board *Revised Water Quality Control Plan* (1993) recognizes pesticide applications for agricultural land as meeting "best management practices." The NCRWQCB BMP approach has been superseded by the "Total Maximum Daily Load" (TMDL) which was initiated by the Environmental Protection Agency under a Federal Court consent decree. A TMDL Plan is required for every water body recognized as impaired under Section 303d of the Clean Water Act (EPA, 1997). TMDL implementation is scheduled for the following Klamath Basins: the mainstem Klamath River in California by 2004, the Salmon River by 2004 and the Shasta and Scott Rivers by 2005.

The Task Force and the CRMP's in the Shasta and Scott sub-basins have implemented demonstration projects that will help decrease nutrient inputs into streams. These projects include tailwater recovery and riparian restoration. Tailwater recovery projects on the Shasta River catch accumulated agricultural runoff which may be warm and nutrient rich. Riparian projects minimize cattle waste in streams and the improved riparian buffers filter nutrients from agricultural runoff. While tailwater recovery is only at the pilot phase, hundreds of thousands of dollars have been spent on riparian restoration by the Task Force and other sources.

Recommendation: The Task Force should work with sub-basin planning groups to determine specific desired practices and move toward their widespread implementation.

AG 2: Explore options for restoration easements (2.C.1d)

The Task Force has taken no action on this policy. However, easements are being funded on a large scale in Washington State as part of Federal salmon recovery strategies. Similar funding may become available in California. Easements allow farmers and ranchers to maintain fee title to their land in the riparian zone and to control public access

in return for cash, tax advantages or a combination of both. If cattle exclusion is part of the terms and conditions of the easement, then those conditions must be met.

Recommendation: The Task Force should co-sponsor a forum on riparian easements to present case studies of successful programs from other areas. Technical assistance should be provided at this workshop on howriparian easement agreements are structured.

AG 3: Investigate and pursue other funding sources to abate non-point source pollution and to improve riparian conditions on private farm and ranch lands. (2.C.1e, 2.C.1f)

The SWRCB has funded five cycles of 319H grants through the USFWS Yreka Klamath Field Office which have been dedicated to non-point source pollution abatement projects and the development of the Klamath Resource Information System (KRIS). Projects that have been funded include alternate stock water systems, tailwater recovery projects and riparian planting and fencing. Additional funding should be coming through Federal salmon recovery efforts.

Large Dams

HP Objective 4: Protect salmon and steelhead habitat from harmful effects of water and power projects in the Klamath Basin.

LD 1. Promote adequate fish protection in relicensing of the Iron Gate Hydroelectric Project (2.E.3)

The Task Force has spent considerable amounts money in pursuit of an instream flow study using the Instream Flow Incremental Methodology. The TWG has recently completed a flow study plan (TWG, 1998) and the funding for its implementation may be available from the BOR. Expenditures on flow related studies are detailed in the Monitoring section below.

LD 2. Oppose further large scale water storage projects until habitat problems from existing ones are remedied and there is proof that new projects will not contribute to habitat problems. (2.E.5)

The Task Force has not had to take action on this item because no such projects have been proposed. The Klamath Basin Water Initiative may advance plans for such facilities in the near future, however.

LD 3. Oppose additional out of basin transfers from the Klamath or Trinity Rivers of water required for protection and restoration of anadromous fish. (2.E.6)

The only possibility of increased out-of-basin transfers has been from the Trinity River (see next recommendation).

LD 4. Advocate improved flows on the Trinity River to better mimic the natural pre-dam flow conditions. (2.E.7, 3.4)

The Task Force has sent a letter to the Secretary of Interior requesting increased flows in the Trinity River for improving salmon habitat.

LD 5. Remedy problems related to large dam operation such as 1) access for salmon and steelhead above Iron Gate Dam and 2) poor water quality and insufficient flows below Iron Gate Dam and Lake Shastina. (2E.2, 2.E.1d, 3.5)

The Task Force studied improving access for salmon into the Upper Klamath Basin as part of the Upper Basin Amendment which has never been adopted. The relationship between flows and water quality below Iron Gate Dam has been studied by U.C. Davis with Task Force funds. Further studies are underway or planned as part of flow studies. Shasta River non-point source pollution studies (205J).

Small Scale Diversions

HP Objective 5: Protect the instream flow needs of salmon and steelhead in streams affected by water diversion.

SD 1. Involve landowners in the Shasta and Scott Basins in developing solutions to instream flow problems (2.F.1a, 3.7)

The Task Force has funded the CRMP coordinator positions in the Shasta and Scott River Basins but only pilot projects have been implemented. The wider agricultural community has not been engaged. The Scott CRMP currently has a Fall Flows Action Plan (Scott CRMP, 1996) which is under revision. Alternative stock water systems have been put in place to try to reduce the need for stock water diversions during fall spawning migrations. The Shasta CRMP has coordinated "pulse flows", which flush juvenile salmonids from the system in spring before water quality problems become acute. The Shasta Watershed Restoration Plan (Shasta CRMP, 1998b) calls for an increase in water efficiency over the next decade to insure that the Shasta River does not drop below 20 cfs.

SD 2. Fund water conservation measures which will provide significant benefit to fisheries (2F.C1)

The Task Force has not directly funded water conservation projects but 319 H projects related to water conservation have been carried out.

SD 3. Investigate and pursue other funding sources to help implement water conservation measures. (2.F.1b, 2.F.1g)

Some pilot water conservation projects have been funded through the 319H grants (see SD 1). More money should be available through joint State/Federal efforts on behalf of endangered salmon populations.

SD 4. Support effective screening of all agricultural diversions and help identify a strategy for maintaining screens. (2.F.1d, 3.11)

The Task Force has funded operation of the Yreka Screen Shop and locally based fish screen construction (see Appendix 5. The Pacific States Marine Fisheries Commission has helped facilitate funding in some years, which was redirected to the Yreka Screen Shop. The Task Force has spent a total of $202,232 on fish screens since 1989.

SD 5**. Support needed changes in California water rights so 1) water rights holders are not penalized for conservation, 2) instream uses like fisheries can have water rights and 3) water rights transfers can be made to instream uses. (2.F.1e)

The Task Force has not taken action on this but California water law was amended through SB-301. This statute allows a water right holder to designate part or all of their water right to instream flow , without penalty or risk of losing that right at a future date.

SD 6. If changes are made in the law, support purchase of water rights from willing sellers for the purpose of improved flows for fisheries. (2.F.1f)

No action up to now, but California SB-301 makes this feasible.

Recommendation: Explore the use of federal salmon recovery funds for acquiring water rights or improving delivery efficiency, with the stipulation that instream flow benefits are accrued.

SD 7. Seek enforcement of Scott River Adjudication through the Watermaster, including compliance with October 15 diversion deadline for stream appropriations. (2.F.3a)

The Restoration Program has funded studies of fall flows in the Scott but no action has been taken.

SD 8. Encourage legal action by the USFS to achieve minimum flows for fish under the Scott River Adjudication.

The Task Force has taken no action on this item but such action is still possible by the USFS.

SD 9. Ask the SWRCB to enforce water rights conditions pertaining to "unreasonable use" in the Klamath River Basin.

The Task Force has taken no action on this item.

SD 10.** In the year 2000, if adequate progress towards improving flow conditions for salmonids has not been made as a result of policies 2.F.1 and 2.F.3, then investigate the option of reallocation of water rights under the public trust doctrine for protection of fish habitat. (2.F.4)

SD 11.** If fish population trends in a tributary system are found to be at critically low levels by the Task Force, the following policies will be instituted, along with necessary harvest restrictions:

a. Pursue appropriate agency solutions.
b. Exercise water allotment rights to provide emergency instream flows. (2.F.2)

The Task Force has taken no actions on either SD 10 and SD 11. It is suggested that they be dropped.

HABITAT RESTORATION

Objectives HR: Restoration projects must use appropriate methods to address factors which limit anadromous fish production

HR 1**. Technically sound projects which benefit "stocks of concern" recognized by the Task Force should receive priority for funding. (3.3)

There is such a widespread problem with anadromous salmonid stock groups that using this criteria for project selection is no longer feasible. For example, coho salmon are at high risk of extinction in almost the entire Klamath Basin. Steelhead in Klamath River tributaries also seem to be under-going a basin-wide down turn (see Appendix 5). Therefore, all recommendations that assighned priority have been dropped. These priorities should be established through sub-basin planning.

Riparian Conditions

R 1 Improve riparian conditions in the Shasta and Scott Basins as well as other areas impacted by grazing. (2.C.1c)

The Task Force's efforts to restore riparian areas in the Scott and Shasta River basins is the most successful aspect of the Restoration Program. The Task Force has funded the following projects:

Easton Bank Protection and Riparian Fencing (Shasta)	1992	$7191
Parker Riparian Fencing (Shasta)	1993	$45,356
Shasta Fencing	1994	$59,929
Scott River Woodland	1994	$31,039
" " "	1994	$12,117
Shasta River Riparian Fencing	1995	$60,809
Demo Alternative Bank Stabilization (Scott)	1995	$54,857

Shasta Riparian Restoration	1996	$16,200
Stream Bank Protection Tozier (Scott)	1996	$50,000
Riparian Woodland Rest (Scott)	1996	$30,281
Yreka Creek Greenway Project (Shasta)	1989	$10,000
Horse Creek Cattle Exclusion Fencing	1995	$7961

Most riparian projects have withstood flood damage well, with the exception of the Horse Creek project where extensive flood damage wiped out both the fence and diversion that was installed with Task Force money.

R2. **NEW** Restore riparian areas in forested basins

The Salmon River Restoration Council and the USFS have performed cooperative riparian restoration projects in the Salmon River basin using $19,604 in Task Force money. Two of these projects were destroyed by flood damage in the January 1997 storm. The USFS has used its own funds and CDFG grant money to plant trees in riparian zones of Indian Creek to help improve long term large wood recruitment, to provide shade and to restore the cool microclimate provided by a coniferous tree over-story.

Control Sediment Sources

S 1: Work with CDF, EPA and the SWRCB to monitor progress on abatement of sediment problems and encourage stepped up enforcement of clean water laws if necessary.(2..A.3)

The Task Force funded studies in the Scott River Basin (see Monitoring). The USFS has also helped with fine sediment monitoring in French Creek but the three agencies named in this recommendation have not studied sediment in streams. The EPA TMDL deadlines for various Klamath sub-basins all recognize the need to abate sediment problems.

Recommendation: The Task Force should encourage sub-basin interests to work pro-actively with the EPA and SWRCB to meet TMDL objectives instead of seeking an enforcement solution.

S 2: Use the Scott River sediment study to prioritize actions to decrease erosion in decomposed granite watersheds and fund appropriate actions. (3.7b)

Although the Task Force has not directly funded erosion control activities in French Creek, other interests have used the sediment study to prioritize sediment reduction in the basin.

S 3: Work with the USFS, private timber land owners and others to insure that erosion from existing roads is decreased and that new roads pose a minimal risk of increased erosion. (3.7c, 3.8b)

De La Fuente (1998) offers guidance for minimizing erosion from new and existing roads. His findings are based on extensive examination of the pattern of road failures across Klamath National Forest during the January 1997 storm and resulting sediment production.

Recommendation: Seek funding for the USFS to more widely implement erosion prevention related to roads under the NW Forest Plan.

S 4**: Implement erosion control measures in Pine Creek in the Lower Klamath Basin and work to minimize erosion from future land use to make it a "model" watershed. (3.9d)

Although the Task Force funded sediment surveys and implementation of erosion control measures, Pine Creek has continued to produce large amounts of sediment. No further funds should be expended in this basin because it is over cumulative effects thresholds and investments in sediment reduction are not likely to succeed without watershed rest. The Task Force funded erosion control in this basin for $61,000 which saved on the order of 20,000 cubic yards of sediment (Hoopa Fisheries Dept., 1997a).

Fish Passage

FP 1**: Find a solution to the problem of fish passage over the agricultural diversion on lower Horse Creek. (3.10c)

This fish passage problem was remedied through Task Force action at a cost of $64,000 but the January 1997 flood washed the project away. No further instream or near-stream projects should be carried out in Horse Creek at this time because it is over cumulative effects thresholds and is likely to experience high discharge in the event of another rain-on-snow event.

FP 2: Study the feasibility of removing fish migration barriers in Middle Klamath Basin tributaries such as Humbug Creek and Rock Creek. (3.10b)

The Task Force has not taken any action on this item.

INSTREAM PROJECTS

The Task Force has avoided investments in instream structures which appears wise in hind sight given the widespread damage suffered by these projects during the 1997 storm. Studies in southwest Oregon and Washington (Frissell and Nawa, 1992) showed that failure of structures is highest when discharge in a ten year storm event exceeded 1 cubic meter per second flow per square kilometer of watershed area.

Recommendation: Maintain criteria for instream projects and consider adding requirements to test discharge during 10 year storm events to gauge runoff as it relates to watershed area.

The criteria for approval of instream structures is as follows:

IS 1. Proposed projects to structurally increase fisheries habitat in any Klamath tributary will be evaluated as to whether: (3.12)

- The erosion potential in the watershed and the expected sediment yield would place the project at risk during moderate storm events (10 year interval or less).
- The stream channel remains highly aggraded and, thus, likely to threaten the stability of the proposed structure.
- The project is properly engineered in terms of its setting (gradient and channel type) and expected flows.
- Habitat assessment has been conducted and the suspected limiting factors identified.
- The proposed project has a clear goal of remedying the identified limiting factors.
- The proposal includes methods to evaluate whether the goal of the project has been reached after project implementation (ideally, a demonstration of its positive cost-benefit performance).
- The project budget includes cost estimates for maintenance.

FISH POPULATION PROTECTION

FPP Objective: Strive to protect the genetic diversity of anadromous fishes in the Klamath River Basin

FPP 1: Use self-sustaining, native fish populations as the gauge for Restoration Program success, not hatchery fish or fish that stray from hatcheries. (4.1)

The Task Force has maintained this criteria for measurement of Program success. Changing the designation of stocks within the basin was studied after the Long Range Plan was written but no Task Force action was taken.

FPP 2: Provide support for local involvement by volunteers in salmon counts. (4.2)

The Task Force has funded Yreka High School to assist in fall chinook surveys (see Monitoring). The CRMPs and the Salmon River Restoration Council have both contributed volunteer time to these efforts.

FPP 3:** Seek increased penalties for poaching salmon and steelhead from local and State jurisdictions. (4.6)

Task Force has taken no action on this recommendation.

FPP 5: Support continuation of fish rescue efforts associated with fish screen operations in the Shasta, Scott and Middle Klamath Basins. (3.11)

The Task Force has funded the Yreka Screen Shop (see SD4) which handles fish rescue related to screen operations. The number of steelhead rescued by CDFG Screen Shop employees has decreased substantially over the last decade.

FPP 6:** Determine escapement goals based on carrying capacity. (4.7)

This recommendation is not technically feasible because carrying capacity is too difficult to determine and it is not static.

FPP 7:** Support high seas drift net bans. (4.8)

The United Nations has moved to ban high seas, long-line drift net fisheries and this type of fishing has been reduced to almost an inconsequential level.

FISH POPULATION RESTORATION (HATCHERIES**)**

FPR Objective 1: Iron Gate Hatchery and Trinity Hatchery should be operated to produce salmon and steelhead to mitigate for the losses of habitat above their dams and, at the same time, strive to reduce impacts on native fish.

Large Hatcheries

Extensive discussions on large and small scale hatcheries and their success can be found in Chapter 10.

LH 1: Work in coordination with other basin interest groups (KFMC, Trinity Task Force and Tribes) to insure that large scale hatcheries are operated in such a way as to maximize production for harvest but to minimize impacts on native stocks.

The Task Force Chair met with the KFMC Chair and the Trinity River Task Force Chair in 1992 to discuss hatchery practices, and other topics. CDFG (1992) responded to the Three Chairs request for a review of hatchery practices by reconfirming that mitigation targets for hatchery chinook salmon releases should not be exceeded. The need for hatchery reform was pointed out by a PFMC (1994) report that studied factors affecting low fall chinook escapement levels from 1990-1992. Fishing guides from the basin have been meeting with CDFG to try to re-establish steelhead runs at Iron Gate Hatchery. The

Hoopa Tribe has been working closely with the Trinity River Hatchery to improve performance at that facility.

Recommendation: Re-kindle a cross interest working group to make sure that hatchery practices in the basin are improved and standardized.

LH 2: Conduct studies to determine optimal planting levels at Iron Gate and Trinity River hatcheries and to devise release strategies that minimize impact on native fish. (5.A.1a)

The Task Force and CDFG have taken no action on this recommendation.

Recommendation: Work with CDFG to alter the number of chinook salmon released from Iron Gate Hatchery according to flow levels and thereby arrive at optimal release strategies over time through adaptive management.

LH 3: Press CDFG for universal marking of all hatchery coho salmon and steelhead and at least consistent fractional marking of chinook salmon at both Iron Gate and Trinity River hatcheries. (4.4a, 4.4b)

The KFMC has been studying the need for consistent fractional marking of chinook salmon for harvest management. Klamath River guides working with CDFG on hatchery management issues also support universal marking of steelhead. Because of the listing of coho salmon and the potential listing of steelhead under the ESA, no wild fish of either species may be kept. Consequently, hatchery coho and steelhead that are not marked cannot be harvested. Large scale fish marking has recently undergone substantial technological advances and tests on universal marking are being carried out at Central Valley salmon hatcheries.

Recommendation: Work with CDFG to establish universal marking if technologically feasible, to maximize access for harvest and to aid in studies of hatchery and wild fish interactions.

LH 4: Encourage hatchery practices that maintain fitness of hatchery brood stocks and minimize straying which impacts wild fish. (5.A.1c)

The Task Force's only involvement in this issue is through the Three Chairs process described above. Iron Gate Hatchery experienced extremely high returns in 1995 and 1996 and released fish back into the river. These fish strayed into the Shasta River raising concerns about competition and other undesirable hatchery-wild interactions. CDFG agreed to destroy excess spawners as an alternative.

LH 5:** Use surplus hatchery eggs for "enhancement" and harvest supplementation (5.A.1b)

There is no way that this recommendation can be carried out without substantial detrimental impacts to wild fish.

LH 6** Conduct studies on Iron Gate Hatchery steelhead Ceratomyxa shasta resistance (5.A.1d)

The Iron Gate steelhead run has been lost; therefore, this recommendation no longer applies.

LH 7:** Support acquisition of Iron Gate Hatchery water filter. (5.A.1e)

This water filtering system has already been acquired.

LH 8 New: Encourage re-establishment of a steelhead run at Iron Gate Hatchery to meet mitigation goals and conduct studies on factors limiting survival of smolts to prevent recurring problems.

Iron Gate Hatchery steelhead runs have disappeared, possibly as a result of mainstem Klamath River water quality impairment (see Chapter 10 and Appendix 5). Any action to re-establish runs will necessarily require study of factors outside the hatchery that might hamper the effort.

Small Scale Hatcheries

FPR Objective 2: Small-scale rearing programs should be temporary measures, primarily for the purpose of accelerating the rebuilding of locally-adapted native salmon and steelhead populations, and operated to maintain the genetic integrity of such populations. Ideally, small-scale rearing programs should be operated in conjunction with habitat restoration projects.

SH 1: Formulate guidelines for small scale hatchery operation that will avoid negative impacts on native stock genetic characteristics. (5.B.1)

The USFWS worked with entities operating small scale hatchery facilities to provide guidance from official USFWS policies on brood stock handling and other aspects of small scale rearing. Most small hatchery operations, such as the Karuk Tribe's Camp Creek facility, have been consistent with regard to marking fish and other steps necessary to minimize impacts on wild fish.

SH 2** Provide small scale hatcheries guidelines with regard to 1) trapping protocols, 2) disease control, 3) brood stock management, 4) marking all release groups, 5) release strategies and 6) project evaluation.(5.B.2)

See SH 1.

SH 3:** Conduct studies in tributaries with hatcheries to determine 1) prudent planting levels, 2) release strategies that least impact wild fish and 3) benchmarks for escapement so that projects can be discontinued when "seeding" goals are met. (5.B.3)

No action has been taken by the Task Force on this item.

SH 4:** Consider green sturgeon artificial culture as part of restoration strategy for this species. (5.B.5)

Green sturgeon are a valuable market fish but a hatchery operation for this species would be very costly and no appropriate site may be available. Consider dropping this recommendation unless it enjoys strong support from the Yurok Tribe or other interested parties.

SH 5:** Explore potential for expanding rearing programs to include steelhead and coho salmon. (5.B.4)

Coho salmon stocks are at such a low ebb in the Klamath Basin that trapping adults would not be feasible. The Camp Creek small scale hatchery operated by the Karuk Tribe has trapped adult coho salmon so it might be possible in that stream. Extreme care must be taken, however, when founding a hatchery broodstock with small numbers of fish (PWA, 1994). Steelhead survival in the basin appears to be limited by water quality conditions in the mainstem Klamath River, not by limited hatching success (see Chapters 2 and 10). While adult steelhead populations in one tributary might be increased temporarily by hatchery supploementation, increases in overall steelhead abundance can only be remedied by reversing water quality porblems in the mainstem Klamath.

WIN COOPERATION

WC 1: Hold trainings on restoration techniques and opportunities. Hold trainings on contract and bid processes to increase local involvement. (3.1a, 3.1b)

The Task Force has allocated $7,000 over three years to help fund the Salmonid Restoration Federation Conference which focuses on restoration techniques. This does not meet the criteria for increasing local involvement, however, because the conference has never been held in the Klamath Basin. Local constituencies interested in restoration have learned of the Program and applied for appropriate funding. This report notes the inconsistent quality of project reports submitted to the USFWS which hampers program evaluation and information sharing. Training sessions might be more productive if they focused on project reporting.

Recommendation: The USFWS staff should present a one-day or half-day course for cooperators to show them exemplary final reports and to discuss how reporting should be done on various types of projects.

WC 2: Give preferences to projects with strong local participation. (3.1c)

The Task Force has funded projects advanced predominantly by local interests.

WC 3: Encourage the formation of local sub-basin restoration groups. (3.1d)

The Task Force has allocated over $450,000 to help support sub-basin planning efforts and restoration coordination. Money has been allocated for the Shasta and Scott CRMPs, the Salmon River Restoration Council, Karuk Tribe, Hoopa Tribe and Yurok Tribe.

WC 4: Enter into formal long-term cooperative relationships with the USFS, CRMPs, RCDs, Indian Tribes and others. (3.2a, 3.2b)

It was contemplated that a formal Memorandum of Agreement (MOA) would be advanced between the Task Force and other basin interests. No such MOA has ever been advanced. Given the high level of cooperation with basin cooperators, it may not be necessary.

Recommendation: Direct the TWG to encourage local basin interests to work cooperatively on sub-basin planning with the USFS in areas with a large public land tracts.

WC 5: Seek cooperation in the Lower Klamath Basin with private landowners to identify sediment sources and seek funding to abate erosion problems. (3.9)

The Task Force has taken no direct action on this item other than to fund the Yurok Tribe for sub-basin planning efforts in the Lower Klamath Basin. The Yurok Tribe are establishing a cooperative working relationship with the Simpson Timber Company and are already working on erosion control in McGarvey Creek.

WC 6: Encourage the USFS to expand cooperative efforts in mixed ownership drainages in the Middle Klamath Basin, such as Beaver Creek, to improve watershed conditions and decrease erosion. (3.10a)

The USFS won funding through the USFWS ERO for erosion control in Beaver Creek and Fruitgrowers Supply Company provided equipment and manpower to abate problems related to roads. The USFS has also been actively involved in the French Creek Working Group, helping with monitoring and other activities.
MONITORING

The Restoration Program has allocated substantial amounts of money for monitoring fish population trends, fish habitat quality, water quality and flow. Monitoring efforts have comprised approximately 45% of all funds spent on projects. While monitoring is costly, it provides the information needed to judge program effectiveness. Monitoring recommendations below were extracted from various sections of the Long Range Plan and grouped together so they can be clearly delineated from recommendations related to restoration activities or Task Force policies. Some new recommendations relate to finding new sources of funding for monitoring activities.

Monitoring Timber Harvest

MTH1: Include fish habitat and population data in State Water Resources Control Board and U.S. Environmental Protection Agency processes. (2.A.2b)

The Task Force helped fund habitat inventories on USFS lands and in Lower Klamath tributaries (see Fish Habitat Conditions) and most of the streams on Klamath National Forest and Six Rivers National Forest have now been inventoried. While habitat typing data is useful to fisheries biologists, it still is not used by water quality specialists. Fish population data is now stored in the Klamath Resource Information System (KRIS) where it can be shared with all people studying the basin. Since KRIS contains most of the water quality data collected in the basin, SWRCB and EPA staff should be using it to access to fish data.

Recommendations: The TWG should decide if habitat typing data is a useful tool in watershed analysis, and if it is, work toward capturing that data in KRIS. If not, modify or drop this recommendation.

Work to keep fish population data in KRIS current.

MTH2: Improve monitoring to discern cumulative watershed effects (CWE) and recovery of stream habitat in logged watersheds. (2.A.2a)

The Task Force funded studies in Pine Creek that were directed at understanding stream recovery related to erosion control activities ($67,690). The study actually showed that sediment production remained extremely high in other basin areas where logging and road building was continuing.

The Klamath National Forest January 1997 storm damage study (De La Fuente, 1998) describing landslide rates in areas with different land management history, advances understanding of cumulative watershed effects substantially. The second phase of that study will assess stream damage and track recovery. USFS fine sediment studies in French Creek (Scott Basin) showed a decrease in sediment in pools after erosion control projects were implemented. The new Stream Condition Index being developed by the

USFS may have potential for characterizing the level of impacts to streams from cumulative watershed effects (Jerry Boberg, personal communication).

Recommendation: The TWG should work with the USFS and use GIS to better understand cumulative watershed effects in logged basins.

MTH3: Evaluate watershed conditions and sediment production potential in logged basins. (2.A.2d, 3.9, 3.8a)

The Task Force has funded several watershed studies that focus on potential sediment production and erosion control. The Siskiyou RCD received $80,768 to study decomposed granitic terrain in the Scott River basin (Sommerstrom, 1990) and has used the results to prioritize erosion control activities. USFS watershed inventory (WIN) studies were funded for the South Fork Salmon River and Crapo Creek, also in the Salmon River basin, in the amount of $34,500. The Task Force funded a study of sediment production for the Salmon River Basin which cost $38,190. (De La Fuente and Hassig, 1994). The Hoopa Fisheries Department studies of Pine Creek mentioned above also included erosion assessments (PWA, 1992). The Task Force funded Energy Resource Advocates for a GIS and remote sensing feasibility study for the Lower Klamath Basin in the amount of $36,829.

The Scott River RCD is moving forward on a sediment source study for the Shackleford and Mill Creek drainages in the Scott Basin. The Yurok Tribe also have recently completed erosion assessments in McGarvey Creek in the Lower Klamath Basin and have begun erosion control activities.

Recommendation: Continue to use erosion potential surveys to help prioritize abatement of sediment sources.

MTH4: Evaluate riparian conditions in logged areas, such as use of the RAPID technique (Grant, 1988) to determine riparian recovery of Lower Klamath Basin tributaries. (2.A.2c, 2.A.2d, 3.9b)

The Task Force has not funded any studies of riparian conditions on forested lands. However, the KNF 1997 storm damage assessment (De La Fuente, 1998) includes changes in riparian in streams effected by the flood.

Monitoring Mining

MM1: Study cumulative effects of a large number of suction dredges. (2.B.1b, 2.B.2b)

No Task Force studies have been funded and none have been carried out by other cooperators. This could create a problem if there is a sharp rise in the price of gold and the number of suction dredge operations increases.

MM2: Study the impacts of large (6-10 inch) dredges used in the Klamath. (2.B.1c)

No studies of this nature have been carried out.

Recommendation: The Task Force should seek the guidance of CDFG as to whether this remains a concern or if this recommendation should be dropped.

MM3: Pursue water quality studies to discern lingering effects from abandoned pit mines.

The Task Force has not funded studies regarding these problems. However, the Karuk Tribe has contracted with a consultant to study Indian Creek water quality, which may provide information on lingering effects of the Grey Eagle Mine.

Monitoring Agriculture (Non-point Source Pollution and Riparian)

MAG1: Monitor water quality trends related to non-point source pollution related to agriculture

The Task Force has taken considerable action on this recommendation. The Siskiyou RCD received $23,000 over a period of three years to monitor Scott River water temperature. The Shasta Valley RCD received $24,470 to study water quality. The SWRCB 319H grants have added substantial impetus to this objective with data being contributed by Shasta and Scott Valley CRMPs and by schools.

MAG2: Assess riparian conditions and trends over time

The Task Force funded the Siskiyou RCD in the amount of $7,054 to evaluate the Scott River riparian zone. Humboldt State University used remote sensing imagery to evaluate riparian zones with a NASA Mission to Planet Earth grant (Fox, 1995). The Shasta Valley RCD acquired SWRCB 205J funds for a riparian zone study of the Shasta River (Deas, 1998). The Scott CRMP is monitoring riparian recovery as part of a large project supported by the Cantara Loop fund and the Wildlife Conservation Board.

Recommendation: Continue to use all tools available to monitor riparian recovery.

Monitoring Flows

MF1: Evaluate the instream flow needs of the Shasta and Scott Rivers and their tributaries. (2.F.1j)

The Task Force awarded $15,843 the University of California (UC) to evaluate fish passage related to fall flows in the Scott River. An earlier study was conducted by the Department of Water Resources, at a cost of $35,964, on the potential for augmenting flows in the Scott River. There is currently a UC Davis study underway to study flow and water quality relationships in the Shasta River, which will cost $46,000. Studies of instream flow needs for these sub-basins may now be funded by the Bureau of Reclamation as part of the overall Klamath Basin flow study (Mike Belchik, personal communication). More studies of this nature are contemplated in the Shasta CRMP (1998) sub-basin restoration plan.

The Task Force has been forced to fund operation of flow gauges because funding through the USGS and California Department of Water Resources was discontinued. To date, $55,023 has been spent over several years to collect this data.

The Shasta CRMP operates a real-time monitoring station accessible by phone that includes flow, water and air temperature and conductivity.

Recommendations: The Task Force should continue funding flow gauge operation but seek a long term sponsor for this data collection so that flow monitoring does not continually drain Restoration Program assets.

Pursue funding for these activities as part of the overall Klamath Basin flow study.

Monitoring Fish Habitat Conditions

MFH1: Find funding or partnerships (USFS) to complete habitat typing or other quantitative assessment of all basin streams. (3.1.3a)

The Task Force has contributed to habitat typing and other quantitative fish habitat assessment studies. The USFWS Arcata field office inventoried Lower Klamath tributaries at a cost of $49,363. The Klamath National Forest conducted habitat typing and salmon spawning habitat surveys at a cost of $207,465. The Hoopa Fisheries Department studied Pine Creek using cross sections and fine sediment samples at a cost of $31,188.

Almost all Klamath Basin streams on USFS lands have been habitat typed. Recent studies have shown that while habitat typing is an excellent inventory tool, it is not sufficiently precise for monitoring.

MFH2: Evaluate spawning and rearing habitat above Iron Gate Dam. (2.E.1a)

There have been no studies funded by the Task Force or others on this topic.

Recommendation: Try to acquire funding for projects as part of the Klamath Basin flow study.

MFH3: Evaluate in-stream flow needs for all life stages of anadromous salmonids in the Klamath River below Iron Gate Dam using state of the art methods. (2.E.1c)

The Task Force's TWG has focused on instream flow needs for over three years and has formulated a comprehensive flow study plan (TWG, 1998) The prospect of funding by the Bureau of Reclamation looks promising (Mike Belchik, personal communication).

Studies funded by the Task Force to date have included one by the National Biological Service (now part of USGS) for $45,000, one by Oregon State University for $21,000 and a third by Utah State University for $9,000.

Recommendation: Pursue full funding for TWG plan through the Bureau of Reclamation Klamath Basin flow study.

MFH 4: Examine the effects of Lake Shastina on the Shasta River's flow and water quality problems below Iron Gate Dam using state of the art methods. (2.E.1d)

There has been no Task Force action taken on this recommendation. Some aspects of this problem may be covered under UC Davis water modeling studies that are on-going in the Shasta River Basin.

Recommendation: Seek funding for this activity as part of the larger Klamath Basin flow study.

Monitoring Water Quality

MWQ 1: Work with agencies such as the EPA, SWRCB and USFS which have water quality monitoring responsibilities to study water quality parameters of interest to the Restoration Program.(3.2c. 3.2d, 3.13b)

The Klamath Restoration Program has enjoyed considerable support from the NCRWQCB through 104b studies, which have included extensive sampling in tributaries basins and mainstem Klamath reaches. The data from these studies has been captured in the KRIS system and is therefore available to all those interested in fishery and water quality. The USFS has gathered substantial amounts of temperature data and published two compendiums (USFS, 1992, 1995). They have also shared data with the NCRWQCB

and much of that data is also now available in KRIS. The KRIS project itself was funded with SWRCB money which was provided as block grants from the EPA.

Recommendations: Continue data sharing through KRIS.

MWQ 2: Monitor water quality above, within and below Copco and Iron Gate Reservoirs for five years to determine the effects of storage and power plant operation on downstream fish habitat conditions. (2.E..1b)

The NCRWQCB 104b studies have included stations above and below impoundments on the mainstem Klamath River and they have been supplemented by Pacific Corp (formerly PPL) studies (Pacific Corp, 1996). The larger Klamath Basin flow study currently being pursued by the Bureau of Reclamation should provide information to answer this question.

Recommendation: Pursue funding for this study as part of the larger BOR Klamath Basin flow study.

Monitoring Fish Populations

MFP 1: Monitor fall chinook stock groups annually, including runs in the Scott, Shasta and Salmon River, selected Middle Klamath tributaries and Blue Creek. (4.3a)

The Task Force has sponsored many projects related to fall chinook stock group monitoring. The USFWS Arcata field office has helped to collect data on Blue Creek, Lower Klamath tributaries and mainstem Klamath spawning escapement. All studies combined cost $229,029. The Yurok Tribe has assumed Blue Creek counting responsibilities and received $36,840 to perform this task from the Restoration Program. The CDFG has continued to coordinate fall chinook salmon spawner estimates in Middle Klamath, Salmon, Scott and Shasta River basins. Partial assistance from the Task Force for CDFG efforts in early years of the Program totaled $80,877 including $17,777 that went to improve the Shasta counting weir. The USFS received $13,864 to help with fall chinook salmon counts. The Hoopa Tribe received $14,058 for fall chinook stock assessment in the Pine Creek Basin. The Karuk Tribal fish harvest monitoring project has helped assess catch in traditional fisheries which helps with stock assessment. The latter project has been funded for $34,832. Escapement monitoring has been a subject of discussion between the Task Force and KFMC (see Section 6). Task Force and KFMC members are suggesting that this program cost might be funded through Operation and Maintenance (O&M) of Bureau of Reclamation projects for both the Klamath and Trinity River.

Recommendation: The Task Force and KFMC should insure that monitoring fall chinook stock groups takes place but request that BOR consider escapement estimates annually as O&M costs of the Klamath and Trinity River projects.

MFP 2: Support volunteer monitoring of anadromous salmonid stocks in cooperation with CDFG. (4.3e)

Volunteers from Siskiyou County high schools have helped conduct annual fall chinook spawner counts of the Middle Klamath tributaries, Salmon, Scott and Shasta River basins. The Task Force funded Yreka High School students to help with counts in one year at a cost of $2,018.

MFP 3: Monitor spring chinook both in the Salmon River and in net and in-river sport harvests in the lower river. (4.3.b)

The USFS has monitored Salmon River spring chinook salmon annually with assistance from the Salmon River Restoration Council, although this effort has not been funded directly by the Task Force. Harvest monitoring responsibilities for Indian net harvest of spring chinook in the lower Klamath River have been assumed by the Yurok Tribe.

Recommendations: Encourage the continued monitoring of spring chinook populations, including the lower river sport fishery.

MFP 4: Monitor summer steelhead populations annually. (4.3c)

The Task Force has not funded any monitoring projects for summer steelhead but CDFG and the USFS have cooperated to perform annual counts of holding adults. Given request for listing under the Endangered Species Act for steelhead in the Klamath Province, adult winter steelhead populations may need to be added to monitoring efforts. Klamath National Forest studied winter steelhead abundance using dive surveys with Task Force sponsorship at a cost of $73,368. The latter study encountered too much variability in dive conditions to yield reliable quantitative data (Brenda Olson, personal communication).

Recommendation: Encourage the continued summer steelhead surveys in Klamath Basin tributaries and study the feasibility of adding winter steelhead to this recommendation.

MFP 5: Study fish rescue efforts associated with diversions and determine the survival of fish captured and transferred downstream. (3.11, 5.B.6)

There has been no action taken on this recommendation. The number of juvenile steelhead rescued by CDFG has decreased precipitously in recent years (Ron Dotson, personal communication).

Recommendation: Discern whether fish rescue is significant enough to consider through discussions with CDFG and CRMPs. If not, remove this recommendation.

MF 6: Request that CDFG use data from guides and punch cards to gauge changes in catch success rates and trends over time. (4.3.f)

The Task Force has not acted on this recommendation.

Recommendation: Maintain this recommendation and act on it unless CDFG Task Force representatives present a case for why this monitoring effort would not be effective.

MFP 7: Monitor green sturgeon through analysis of in-river fishing data but also include range, distribution and vulnerability in fisheries outside the Klamath. (4.3g, 4.3j)

The USFWS Arcata field office was funded by the Task Force to monitor green sturgeon harvest for $4,507. The Yurok Tribe in cooperation with Humboldt State University conducted a study with Restoration Program funds regarding the genetics of Klamath River green sturgeon at a cost of $21,102.

MFP 8: Collect additional information on life history patterns and stock structure of the basin's anadromous salmonids. (4.3h)

Restoration Program has devoted very large sums of money to this task.. The USFWS Arcata field office has been funded to operate downstream migrant traps on the mainstem Klamath River and Lower Klamath tributaries and conduct scale analysis. The total amount spent by the Task Force for these projects totaled $324,898 from 1989-1997. The USFS has analyzed the use of Klamath Basin tributaries which helps to understand juvenile life history patterns and habitat use with Task Force funds totaling $14,500. Investigators from Cal Poly at San Luis Obispo studied genetics of spring and fall chinook in the Klamath Basin with $18,434 in Task Force funds. The Hoopa Tribe received $48,458 from the Task Force for downstream migrant trapping on Pine Creek and other Hoopa Reservation tributaries.

MFP 9: Encourage study of cutthroat trout, eulachon and Pacific lamprey. (4.3k)

The USFWS now collects data on Pacific lamprey migrants caught in traps. The Yurok Tribal Fisheries Department has recently completed a study on eulachon and Pacific lamprey as well as another study of salmonid distribution in Lower Klamath tributaries which includes cutthroat trout. On-going studies of the Klamath estuary also yield information on cutthroat trout.

Recommendation: The Task Force should continue to assist in funding fish health studies as needed.

Hatcheries

Fish Health

MH 1: New Recommendation: Monitor fish health to better understand problems for hatchery fish from diseases and the link between environmental stresses and epidemiology.

The Task Force has allocated $50,341 for Klamath River fish health studies carried out by the USFWS California/Nevada Fish Health Center. Such studies are critical for understanding disease outbreaks which could otherwise confound the Restoration Program.

MH 2: **New Recommendation** Conduct studies of hatchery performance and marking strategies as they pertain to harvest and interactions between hatchery fish and wild fish.

The Task Force funded Humboldt State University to study marking of hatchery fish as it relates to harvest monitoring at a cost of $36,165. This type of study allows use of hatchery fish to represent Klamath River contributions to ocean fisheries. CDFG was funded by the Restoration Program to evaluate salmon production at Iron Gate Hatchery in 1989 in the amount of $56,700.

Recommendation: Work together with KFMC, Trinity Task Force and CDFG to achieve uniform hatchery practices between Iron Gate and Trinity River hatcheries, particularly with regard to universal marking or constant fractional marking.

MH 3: **NEW** Evaluate small scale rearing programs to determine their cost-effectiveness and to discern possible interactions with wild fish.

CDFG was funded to determine the effectiveness of small scale rearing and pond rearing projects in the amount of $54,200.

EDUCATION

Public Schools

E 1: Continue developing curriculum (6.1a)

The Task Force funded, over a five year period, the development of a kindergarten through high school Klamath River Educational Program (KREP). The curriculum guides

that were created as part of the KREP are being used in the Klamath River Basin and throughout California and parts of Oregon.

This recommendation has been fulfilled and should be dropped.

E 2: Encourage school districts to integrate Klamath River Education Program (KREP) materials into their regular curriculum. (6.1b)

Some funding for incorporating the KREP into special school programs has been provided to individual schools, including Eureka High School, Salmon River School and the Etna School's Kidder Creek Program. The Task Force should continue to make funds available to schools that want to use the KREP materials.

E 3: Sponsor workshops and conferences to keep teachers updated about the Restoration Program. (6.1c)

The KREP sponsored two week-long summer institutes for teachers in the Klamath River Basin, and two for students. The Task Force also funded field trip to the Upper Klamath Basin for students from Eureka High School whose teacher had participated in a KREP summer institute. Several one-day workshops were also held for teachers over a period of several years.

E 4: Budget for $10,000 annually for school "mini-grants" to keep schools involved in river studies related to restoration. (6.1d)

The Task Force has made a small amount of money available to schools for this purpose, as reported in E-2.

Community Education

E 5: Provide educational forums for foresters. (2.A.1a, 2.a.1c, 2.A.1e)

The Task Force and USFWS staff have taken no action on this recommendation. However, the French Creek Working Group held focused discussions on road and forestry issues in that sub-basin.

E 6: Minimize impacts of suction dredge mining by educating miners as to their potential impacts on fish habitat. (2.B.1a, 2.B.2a)

The Salmon River Restoration Council has actively worked with miners on issues related to habitat impacts and poaching, using Restoration Program grants.

E 7: Sponsor local workshops for farmers and ranchers. (2.C.1a, 2.C.1g, 2.F.1b, 2.F.11)

Many educational forums have been held by locally based groups such as the Scott River CRMP. Annual Klamath Basin Symposia have been held which present opportunities for farm and ranch groups to find out more about fisheries and restoration. However, for the last several years the Klamath Symposium has been held in Klamath Falls, Oregon which discourages farmers and ranchers from the Shasta and Scott Valley's from participating. (See recommendation under AG-2 re: a forum on riparian easements.)

Recommendation: Join with other cooperators in sponsoring a conferences on riparian restoration and increasing efficiency of water use, including field trips to local project sites.

E 8: Support 4H programs related to riparian restoration. (6.2a)

The Task Force has taken no action to involve the 4H program specifically. However, local cooperators such as the Shasta CRMP have found strong support in riparian planting efforts from local schools. The Yreka High School HROP program has set up a native plant tree nursery to supply stock for riparian planting. Weed High school has helped with tree planting and monitoring of riparian recovery in the Shasta Valley and students from Sisson Elementary planted 2,500 trees on the A.C. Marion Ranch as well. Students from Dorris Elementary School have helped the USFS by planting trees in meadows at the headwaters of the Little Shasta River and Montague Elementary School planted trees on the lower reaches on the CDFG Wildlife Refuge.

E 9: Encourage development of interpretive programs at I-5 rest area and at the mouth of the Klamath at Highway 101 on the Yurok Reservation. (6.2b)

No action has been taken.

Recommendation: The Task Force should explore with the Yurok Tribe the creation of a model restoration demonstration project adjacent to the Klamath River Estuary along Salt Creek and lower Hunter Creek adjacent to Highway 101.

E 10**: Assemble a suitable display for county fairs. (6.2c)

Contractors have created two displays that meet this objective: one on the Restoration Program and the other on fisheries management. These have been used at fairs, malls, conferences, county offices and the Humboldt County Airport. This recommendation could be dropped because the objectives have been met.

E-11: The Task Force should maintain public education programs to reduce poaching. (4.5)

The Salmon River Restoration Council helped to substantially reduce poaching in the Salmon River Basin through a locally based education program. Presentations were made at two locations in the basin and at Sommes Bar. The enhanced awareness of residents

increases scrutiny of activities along the river in areas where fish are holding. It is no longer considered politically correct to hold salmon barbecues during summer featuring spring chinook.

E-12: Work with angler groups, resort owners, guides and county fish and game advisory committees to promote angler awareness of the Restoration Program's goals and objectives. (6.2d)

The portable information display has been used extensively for this purpose. Fish and Wildlife Service staff have also made presentations to Siskiyou County angler groups about the Program. The Restoration Program's newsletter also reaches some members of this constituency.

E-13: Conduct workshops for state, county and private road maintenance personnel concerning methods for decreasing sediment contributions from roads. (6.2f)

While the Restoration Program has not funded workshops of this nature, workshops of this type have been sponsored by the Scott Valley CRMP, the Salmon River Restoration Council and the Karuk tribe.

E-14: Join with the Klamath Basin tribes in sponsoring a conference about the Indian fisheries. (6.2h)

The Restoration Program funded the Native American Fish and Wildlife Society meeting in 1992. The program has also funded the Hoopa Tribe to conduct community education workshops.

PROGRAM ADMINISTRATION (PA)

PA Objective: Provide adequate and effective administration to successfully implement the Restoration Plan and Program.

PA 1: Involve interests or agencies not represented on the Task Force through several methods:

PA 1a. Decision-making: Task Force members should each try to reflect public interest and equity values in their decisions and not just the views of their organization. (7.1a)

There have been rare instances of where TF members have demonstrated flexibility concerning constituency's demands, in order to ease conflict among the membership, but such moderation has certainly not been the rule. See related findings in Chapters 2 and 6.

Recommendation: The Task Force has chosen to operate under a consensus rule, and therefore the Task Force should give it a strong chance to succeed. The easy issues have been addressed in the first half of the program, now the Task Force faces the harder issues of water and land use.

The Task Force should clearly put the issues of a well-functioning consensus process on the table and consider the following:

- Dedicating a workshop session in the near future to reviewing what a consensus process is supposed to be, and how it is supposed to function
- Hiring a professional facilitator on an "as needed" basis to work through chronic issues such as the Upper Basin Amendment, issues of tribal vs. agricultural water rights, alternative opportunities for water management
- Making a conscious effort to recognizing when issues need to be brought to a facilitator, and scheduling meetings for those specific purposes.
- Discontinuing use of Robert's Rules of Order and adopting a meeting style more consonant with a consensus process.

PA 1b. Technical Work Group membership: Appointments of technical specialists from other agencies or groups should be made to this Task Force subcommittee, which solicits and evaluate project proposals. (7.1b)

Done. See discussion of TWG's contribution to the Program in Chapter 6.

PA 1c. Public Involvement: Task Force should continue seeking public opinion at its meetings but also develop or support working groups to address different problems or problem areas. Coordinated Resource Management and Planning (CRMP) is another method to involve a wide spectrum of participants. (7.1c)

Done. The TF has tasked sub-committees on some matters, including Upper Basin Amendment and Mid-term Evaluation workplan development. The TF has encouraged and funded CRMP development in Shasta, Scott and Salmon sub-basins. See discussion in Chapter 6.

PA 1d. Cooperative or interagency agreements should be used to carry out restoration activities with non-Task Force agencies, which may be jointly funded. (7.1d)

Done. See discussion Chapter 4.

PA 2. Ensure the decision-making process will work well.

PA 2a. Arrange a training session for the Task Force in the consensus decision-making process. (7.2a)

No action taken. See recommendation at PA 1a, above.

PA 2b. As an option, use the "abstention" position when a member does not feel strongly enough about a proposal to vote "no," yet cannot support the proposal. (7.2b)

Abstentions occasionally voiced, but most commonly on non-substantive issues.

PA 2c. ****** Adoption of rules similar to the "T/F/W Ground Rules," under which each member agrees to work. (7.2c)

No action taken. Not necessary if recommendation at PA 1a is pursued.

PA 2d. Actively seek to negotiate a compromise that considers the needs of all parties. (7.2d)

TF has tried to negotiate compromise on substantive issues, but without success. Again, recommendation at PA 1a should be pursued.

PA 2e. Retain the consensus approach to decision-making. (7.2e)

Done. See discussion in Chapter 6.

PA 3. Assign Committees, made up of Task Force and Technical Work Group members or representatives, to monitor each of the Plan's major components: Habitat Protection and Management, Habitat Restoration, Population Protection (includes liaison with Council), Population Restoration, Education and Communication, and Administration. Committees shall report at each Task Force meeting about progress of policy implementation. (7.3)

The TF has done this a number of times on an as-needed basis, for example, for education and outreach; basin stock-group classification; Upper Basin Amendment issues; and the Mid-term evaluation workplan. The evaluation team does not believe that the TF needs a sub-committee for each and every Program element on an on-going basis.

PA 4. Formally evaluate plan and program progress and provide for amendments to the Plan.

PA 4a. A Program Review shall be done every 5 years during the Program's life span. The first Program Review should begin in 1995, followed by reviews in the years 2000 and 2005. (7.4a)

This Mid-term evaluation – the Program Review proposed above – was begun in 1997. The next review, to be begun in 2004, if the recommended five-year cycle is followed, will hopefully position the Program for a constructive Klamath Act reauthorization discussion.

PA 4b. An Annual Progress Report appropriate for public review shall briefly summarize the results of Task Force actions and projects to date, including an accounting of the costs. Both Federally and non-Federally funded projects should be included. (7.4b)

The KRFWO has done only two of the Annual Progress Reports recommended above, one for the years through FFY 91 and one for FFY 92. The reports, simple annotations of the *Long Range Plan's* step-down structure, were lengthy and repetitive.

PA 4c. Plan Amendments shall be provided for on a regular basis, as new information and conditions arise. Policy changes should be based on new findings in the text. (7.4c)

No Plan amendments were adopted during the evaluation period, although considerable effort was made by the TF to bring the proposed Upper Basin Amendment to an adoptable condition.

Recommendations: The evaluation team recommends that the revised Plan structure presented here be adopted and, further, that TF actions and Program grant agreements be coded using the new structure code and entered into a database for easier and more useful annual Program reports. See database discussion at the end of this chapter.

It is recommended that the sub-basin plans developed by the Shasta, Scott and Salmon River CRMPs be reviewed and adopted as quickly as possible.

It is recommended that the TF explore with the National Marine Fisheries Service at the earliest opportunity the possibility that the updated *Long Range Plan* be recognized officially as the guidance for the recovery of those basin salmon and steelhead species listed under the federal Endangered Species Act.

PA 5. The Program should continued to use a mix of USFWS staff, consultants, and TF committees to meet its administrative needs. Part-term Program evaluations should continue to include analyses of staffing and budget-related issues. (7.5)

The Program has used all its administrative options: USFWS staffing, consultants and TF committees.

PA 6. Ensure adequate funding is available to implement the Plan. (7.6)

The KRFWO and the TF have done a reasonably good job of identifying opportunities to bring new funds to bear on Plan implementation – including $1 million in Clean Water Act funds, Jobs in the Woods funds and others. The Clinton Administration's $100

million FFY 2000 Pacific Coastal Salmon Restoration Initiative represents an extraordinary opportunity for the KRFWO and TF to link up with key federal and State officials to explore how to target the new funds on Klamath *Long Range Plan* implementation.

Recommendation: The TF should approach the National Marine Fisheries Service and the California Resources Agency, at its earliest opportunity, with the proposal the *Long Range Plan* and Restoration Program be at least *tentatively* designated by the Service as the recognized program for the recovery of the basin's Endangered Species Act-listed salmon and steelhead -- in the same manner the Plan and Program were recognized earlier as the basin's water quality restoration platform by the State and federal Clean Water managers.

Whether or not such a proposed designation directs the Klamath River basin's share of the new Initiative's funding to and through the Restoration Program's grant process, entities using the new funds should be guided in their restoration projects y the provisions of the updated Plan.

PA 7. Promote and provide opportunities for information sharing.

PA 7a. Klamath River Fishery Resource Office should develop a catalogued technical library as the repository for completed project reports, historical and recent Klamath Basin references, and other pertinent restoration materials. (7.7a)

The KRFWO has developed a good technical library and it is being used by some Program cooperators and others.

PA 7b. Klamath River Fishery Resource Office should regularly produce a newsletter for continuous communication about ongoing and completed projects and their results, as well as other related topics. (7.7b)

The KRFWO did produce a newsletter during the early years of the Program. Because it was an official USFWS newsletter it required USFWS/Portland review. This agency review process frustrated the release of timely newsletter information. Further, the newsletter mailing list was generally restricted to people already interested in and knowledgeable about the Program. Ultimately the newsletter production gave way to what were perceived as higher priorities, including staffing the KFMC meetings.

The USFWS' Chehalis Fishery Restoration Program in Washington uses a contractor to prepare a Program newsletter which is then included as an insert in that basin's general circulation newspapers.

Recommendation: Explore the possibility of using the Chehalis model, using a consultant and newspaper distribution, for a revived Klamath Restoration Program newsletter.

PA 7c. [**New**] Use the Klamath Resource Information System (KRIS) as the Program's database for monitoring and evaluating fish population, fish habitat and water quality recovery efforts. (2.A.1d) (2.A.2a-d) (2.A.4a) (7.7c,d)

The 1991 *Long Range Plan* recommended that the TWG should evaluate and recommend a restoration data management software option, including the possible use of the U.S. EPA's water-body monitoring system, for the Program's use. In the years since, the TF has recommended and the KRFWO has obtained funding to develop KRIS. KRIS, which is now in place to serve the Program's restoration data management needs, can be used to understand CWE, monitor recovery of logged watersheds and to evaluate riparian conditions.

Recommendation: The TF should encourage, and the KRFWO should enable the dissemination of information concerning KRIS' use and its usefulness in maintaining the Program's restoration data. Program cooperators should be encouraged to contribute data updates, including photos, bibliographic materials, and other information elements to assure KRIS' preparedness to provide essential information concerning the progress and efficacy of the Restoration Program.

PA 7d. Support publication of the results of Task Force funded projects in the scientific literature, periodicals for the general public, and a Klamath River Fishery Resource Office Technical Report Series. (7.7e)

The way in which this (and the 1991 following recommendation concerning the dissemination of Program information through conferences and workshops) recommendation is being implemented on a regular basis is through the annual Klamath Basin Watershed, Restoration and Research symposia organized by the USFWS' Klamath Basin Ecosystem Restoration Office. The symposia produce abstracts of the many papers and posters presented and, thereby, contribute significantly to the accomplished of the 1991 Plan recommendations.

PA 8. Improve the understanding of agency jurisdictions. (7.8)

Parts (a) and (b) of this 1991 recommendation appear to have addressed the jurisdictional issues concerning the basin's Tribes' interest in fish and fish habitat vis-à-vis those of the State and federal agencies and the non-tribal fishermen. Those issues underwent significant judicial review between 1993 and 1995 and are now substantially settled.

PA 9. [**New**] The TF should actively confer with State and federal authorities responsible for stream protection in the basin, including the Department of Fish and Game and the California Department of Forestry and Fire Protection concerning the continuing need for improved stream protection standards under the provisions of the State Forest Practice Act, Fish and Game stream modification regulations (F&G Code Section 1600 et seq.) and other stream protection laws. See Chapter 1 and Appendix 5-1 for findings supporting this recommendation.

PA 10. Provide comments on proposed public and private projects within the Basin that have the potential for affecting the implementation and success of the Restoration Plan and Program. (7.11)

The TF and Project Leader have commented on numerous occasions on public and private actions within the Basin that have the potential for affecting the implementation and success of the Restoration Plan and Program. See Appendix 2-1 for details.

DATABASE MANAGEMENT

The USFWS operates two databases, one is administrative and the other which shows locations of restoration projects in ArcView. The former is the focus of most comments below.

Action minutes should also be done in the form of a database or at least a table with a column for goals and category of action from for the Long Range Plan or the new structure advanced above. A number field for each discreet agenda item and action would allow sorts and counts at a minimum.

With regard to the administrative database, the USFWS should continue to use a standard spreadsheet program such as Quattro Pro or Excel or upgrade to a more robust database such as Paradox or Access. Database programs are less subject to incorrect entries as they will not integrate changes that violate field definitions. Such databases are much more powerful in terms with regard to building queries and providing different types of reports. However, databases can present problems for non-specialists, so full instructions for maintenance and reporting would have to be codified in an instruction manual or an on-line help system.

The USFWS should maintain broad program categories in their administrative database (i.e. HP) but add a category to match each new consolidated recommendation category (i.e. M-1). The USFWS, Task Force and TWG need to ask which parameters are most important for program tracking and include fields in the database that allow the most powerful summaries, then include a column for each. For example, the sub-basin field should be maintained so that totals by geographic area can be summed. Other fields should include member and non-member status and matching funds (both direct and in-kind). Multiple fields make unique identifiers for each project, which help eliminate redundant entries.

To make data entry easier and decrease chances for errors some fields should be switched to a relational database. For example, instead of typing sub-basin names abbreviations can be used. A second database with a key is kept separately and can be used in tables when the full sub-basin name should be used for clarity. This type of system can be used for text fields that can cause clutter in the main database which will now be used primarily for program tracking.

The ArcView database created by Humboldt State University with direction from the USFWS and TWG needs to have a property owner data field. A similar request should be made of CDFG that also maintains a GIS for restoration projects. This field could be used to join both set. At present it is impossible to figure out where USFWS and CDFG projects have occurred on the same ownership and geographic positioning (GPS) is not sufficiently precise to answer this question. Fields should be added for riparian restoration projects which total lineal feet of banks planted and a summary value for planting success which can be updated over time.